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स्वचल वाहन — यात्री गाड़ियों के लिये साइडडोर की सुरक्षा अपेक्षाओं की सिफारिशें

(पहला पुनरीक्षण)

Indian Standard

AUTOMOTIVE VEHICLE — SAFETY REQUIREMENTS FOR SIDE DOOR OF PASSENGER CARS — RECOMMENDATIONS

(First Revision)

UDC 629.114.6.011.663 : 614.8

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BUREAU OF INDIAN STANDARDS
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NEW DELHI 110002

November 1995 **Price Group 2**

Automotive Body and Chassis Sectional Committee, TED 6

FOREWORD

This Indian Standard (First Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Automotive Body and Chassis Sectional Committee had been approved by the Transport Engineering Division Council.

This standard is one of the series of Indian Standards on safety requirements of automotive vehicles. In this revision test requirements have been modified according to practical data available in the country. During this revision considerable assistance has been derived from ARAI Safety Standard No. 6/1986 Side door strength — Passenger cars and SAE J 367 'Passenger car door system crush test procedure'.

The composition of the Committee responsible for the preparation of this standard is given in Annex B.

In reporting the results of a test or analysis made in accordance with this standard, if the final value, observed or calculated, is to be rounded off, it shall be done in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'.

Indian Standard

AUTOMOTIVE VEHICLE — SAFETY REQUIREMENTS FOR SIDE DOOR OF PASSENGER CARS — RECOMMENDATIONS

(First Revision)

1 SCOPE

This standard specifies the strength requirements for side doors of passenger cars to minimize the safety hazards caused by intrusion into the passenger compartment in a side impact accident.

2 DEFINITIONS

For the purpose of this standard the following definitions shall apply.

2.1 Side Door

A door that may be used for occupant's entry/exit.

2.2 Initial Crush Resistance

It is the average force required to deform the door over the intial 150 mm of crush distance.

2.3 Intermediate Crush Resistance

The average force required to deform the door over the initial 300 mm of crush distance.

2.4 Peak Crush Resistance

The largest force recorded over the entire 450 mm of crush distance.

3 REQUIREMENTS

The passenger car shall be able to meet the requirements given in **3.1** when any of its side doors is tested according to the procedure given in Annex A.

3.1 With seats installed in the vehicle, and located in any horizonatal, inclined or vertical position to which they may be adjusted and at any seat back angle to which they may be adjusted, the car shall meet the requirements of **3.1.1** to **3.1.3**.

3.1.1 The average initial crush resistance shall not be less than 0.6 times the kerb weight of the car or 10 kN, whichever is less.

3.1.2 The average intermediate crush resistance shall not be less than 1.2 times the kerb weight of the car or 20 kN, whichever is less.

3.1.3 The peak crush resistance shall not be less than 2 times the kerb weight of the car or 55 kN, whichever is less.

ANNEX A

(*Clause* 3)

SIDE DOOR STRENGTH TEST PROCEDURE

A-1 The side door shall be tested by the following procedure.

A-1.1 The vehicle or body and chassis frame shall be rigidly mounted in a manner that will not restrict the deflection of the door system being tested. This may be accomplished by bolting the chassis frame to a flat horizontal bed plate. Attachments may be made at any location along the chassis any/or at the suspension mounting points. If a chassis frame is not used, attachments may be made to the underside of the body, avoiding attachments to the body sill on the side of the body being tested.

A-1.2 The loading device shall consist of a rigid steel cylinder or semi-cylinder of 300 mm in diameter and in height suit to boundary condition with an edge radius of 12 mm as shown in Fig. 1. The loading device shall consist of a rigid steel cylinder or semi-cylinder 300 mm in diameter with an edge radius of 12 mm. The length of the loading device shall be such that the top surface of the loading device is at least 12 mm above the bottom edge of the door window opening but not of a length that will cause contact with any structure above the bottom edge of the door window opening during the test.

A-1.3 Locate a suitable loading device as illustrated in Fig. 2 so that:

a) its longitudinal axis is vertical,

b) its longitudinal axis is laterally opposite to the midpoint of a horizontal line drawn across the outer surface of the door 125 mm above the lowest point of the door,

c) its bottom surface is in the same horizontal plane as the horizontal line described in (b), and

d) the cylindrical face of the device is in contact with the outer surface of the door.

A-1.4 Using the loading device, apply a load to the outer surface of the door in an inward direction normal to a vertical plane along the vehicle's longitudinal centreline. Apply the load continuously such that the travel rate of the load does not exceed 12 mm per second until it travels a distance of 450 mm. Ensure that the loading device does not rotate or is displaced from its direction of travel. The test shall be completed within 2 minutes.

A-1.5 Record the values of applied load versus displacement of the load either continuously or in increments of not more than 25 mm or 1 kN for the entire crush distance of 450 mm.

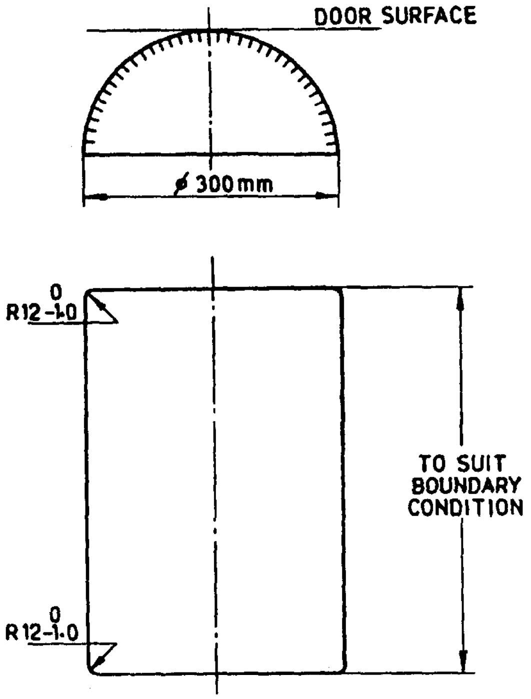

FIG. 1 LOADING DEVICE

A-1.6 Determine the initial crush resistance, intermediate crush resistance and peak resistance as follows.

A-1.6.1 From the results recorded in **A-1.5** plot a curve of load versus displacement and obtain the integral of the applied load with respect to the crush distance specified in **2.2** to **2.4**. These quantities, expressed in Nm and divided by the specified crush distances, represent the average forces in Newton required to deflect the door through those distances.

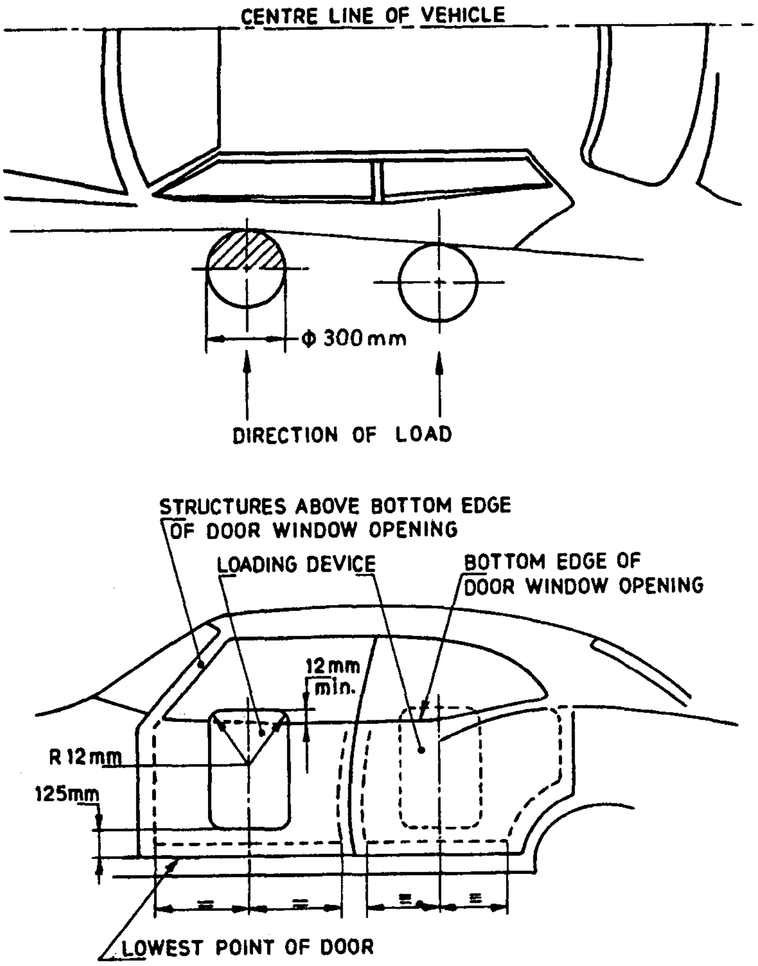

FIG. 2 TYPICAL ILLUSTRATION OF LOADING DEVICE LOCATION AND APPLICATION TO SIDE DOOR

ANNEX B

(*Foreword*)

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Amendments Issued Since Publication

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